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(56) Documents cited

GB 2212615 A GB 0720602 A EP 0225008 A  
US 4535317 A US 4322983 A

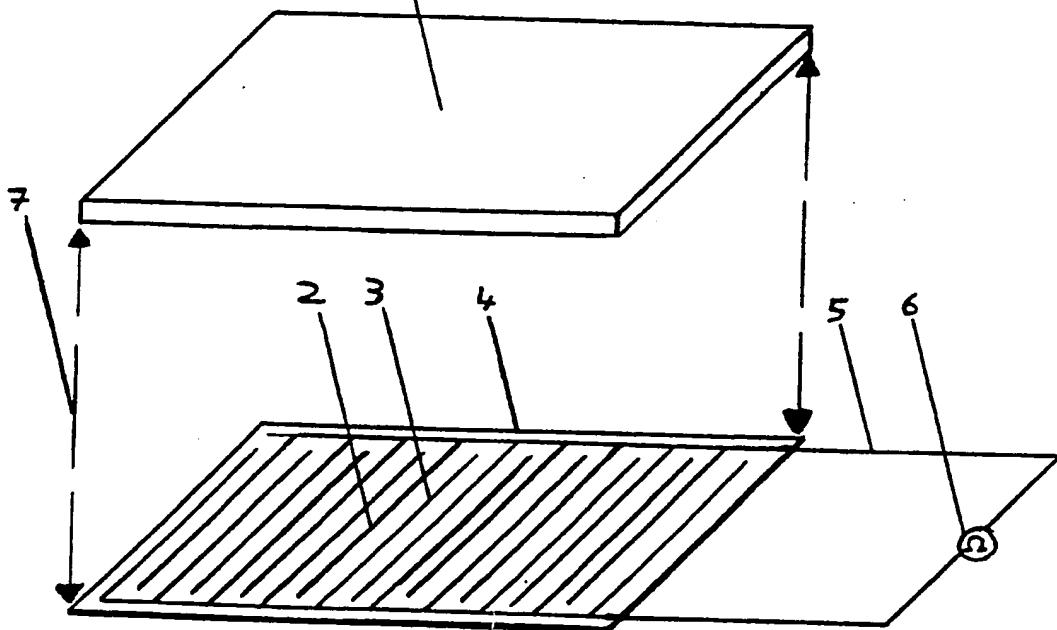
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## (54) Tactile pressure sensor

(57) A tactile pressure sensor comprises two conductive combs 2 & 3 on a substrate 4 upon which is bonded a layer of conductive foam 1 such that the conductive foam 1 and the conductive combs 2 & 3 are in contact. The impedance of the conductive foam 1 is measured by a standard impedance measurement device 6 via an electrical circuit 5; the impedance changes as the conductive foam 1 is compressed towards the substrate 4. When the conductive foam 1 is released, the impedance returns to its 'normal' state. The conductive combs may be formed directly on the substrate or alternately directly on the foam before it is applied to the substrate.

FIG. 1

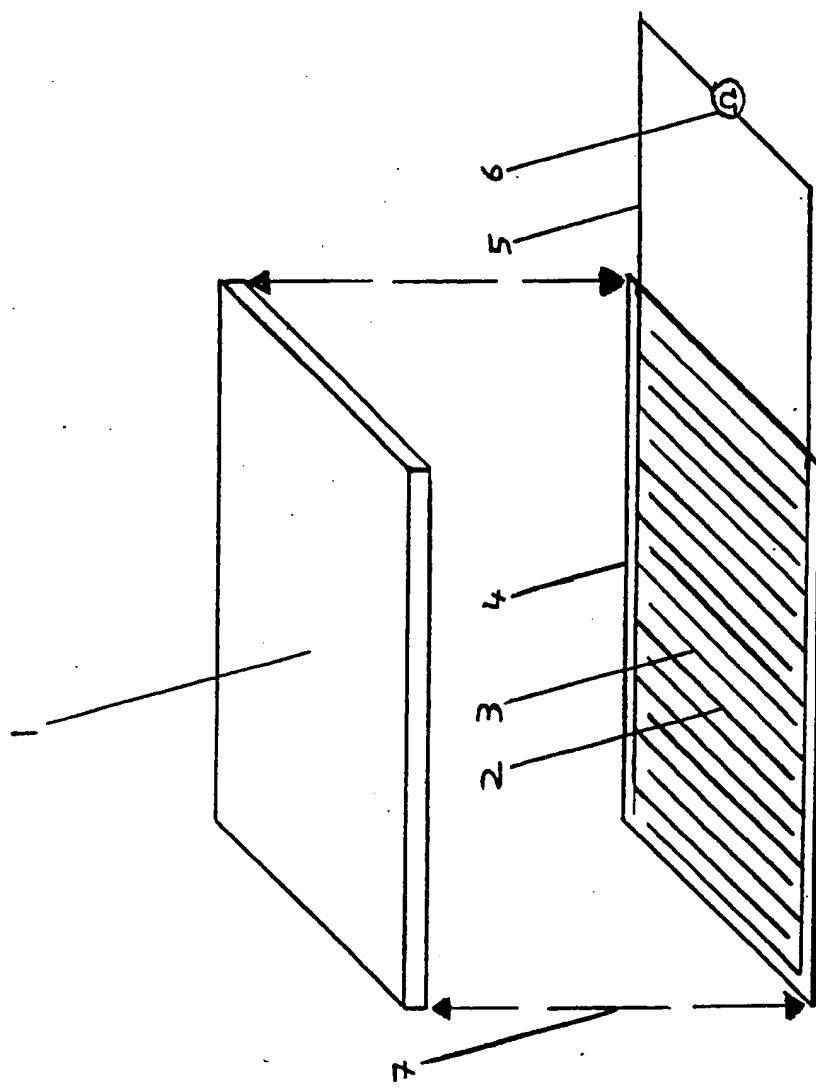


GB 2 222 258 A

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FIG. 1



## TACTILE SENSOR

This invention relates to a tactile sensor.

Tactile sensors are transducers designed to change a non electrical parameter, pressure, into an electrical parameter. There exist a number of methodologies by which this parameter translation may be effected.

According to the present invention, there is provided two electrically isolated meshed conductive combs upon a substrate. Onto the substrate and the conductive combs, a film of conductive foam is bonded, such that the foam is in direct contact with much of the comb surface. Alternatively the conductive combs may be attached to the foam, and bonded to a substrate. By the use of a low voltage potential difference between the two combs, the impedance of the foam is measured. Upon deformation of the foam, for example, when the foam is pressed against the substrate, the impedance of the foam is altered. This change may be measured by a suitable standard electronic circuit.

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawing in which:-

Figure 1 shows detail, in an exploded view, of the tactile sensor.

Referring to the drawing, the tactile sensor comprises a substrate 4 upon which are two conductive combs 2 & 3, connected by an electrical circuit 5 to an impedance measurement device 6. Bonded 7 to the substrate 4 is a sheet of conductive foam 1, in such a way that the conductive foam 1 and the conductive combs 2 & 3 are in contact.

Current by which the impedance can be measured is supplied to the conductive combs 2 & 3 from the impedance measurement device 6 via the electrical circuit 5.

As the conductive foam 5 is depressed in the direction of the substrate 4 its impedance changes, due to an increased area of conductive foam 5 coming into contact with the conductive combs 2 & 3, and due also to the differential in impedance of compressed conductive foam relative to uncompressed conductive foam.

## CLAIMS.

1. A tactile sensor comprising a sheet of conductive foam bonded to a substrate on which lie two meshed conductive combs, which combs are attached by means of an electrical circuit to an impedance measurement device.
2. A tactile sensor as claimed in Claim 1 wherein the conductive combs are bonded to the conductive foam and then to a substrate.
3. A tactile sensor substantially as described herein with reference to figure 1.
4. A tactile sensor substantially as described herein, wherein another similar material is used in place of the conductive foam.